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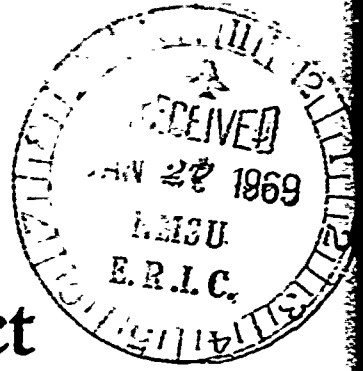
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Programmed English instruction in small schools was designed to provide a wider spectrum of curricular experiences to enhance the somewhat narrow offerings of the regular English curriculum. The specific course outline and evaluation of the programmed English instruction at Des Moines High School indicated that the project in this New Mexico small school was feasible and successful. The programmed English instruction allowed the students to work at their own rate and the teacher to provide frequent and almost immediate reinforcement on student assignments. (DK)

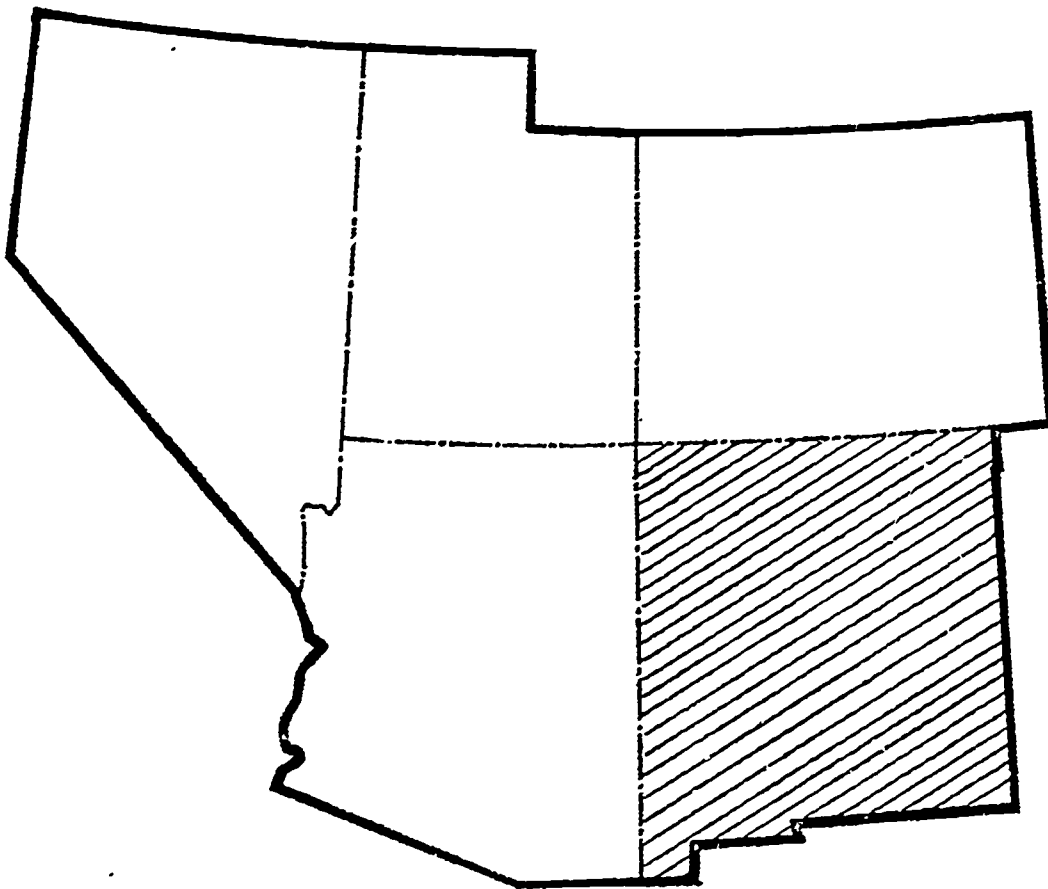
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NEW MEXICO

Western States Small Schools Project

PROGRAMMED ENGLISH
DES MOINES HIGH SCHOOL



STATE DEPARTMENT OF EDUCATION
SANTA FE

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Foreword

The purpose of this publication is to assist English teachers and administrators contemplating the use of programmed English in their schools through 1964-65. We hope to assist by reporting the classroom experience, with programmed English in the 1962-63 and 1963-64 school terms, of Mrs. Cloe Click, who was then English teacher at Des Moines High School.

This study was conducted under the auspices of the New Mexico Western States Small Schools Project, a project directed by the New Mexico State Department of Education and financed by the Ford Foundation.

The consultants for the study were Dr. Henry E. Ellis, Associate Professor of Psychology, University of New Mexico; Henry Pascual, Specialist, Modern Foreign Languages, New Mexico Department of Education; Paul Simpson, Specialist, English Language Arts, New Mexico Department of Education.

DAN D. CHAVEZ
Project Director

Problems and Objectives

The program of Des Moines School shall be built around the needs of the individual student. The student shall not be programmed according to the confines of the schedule and the chains of tradition. This shall be accomplished by the following objectives:

1. Providing an adequate faculty, plant, flexible schedule and materials center or library.
2. A recognition by faculty members, administrator, and board of education that education is a dynamic, changing process and must be reflected by a changing and dynamic curriculum.
3. A "spirit of research" among the *school faculty* and administration.
4. Faculty members and the Administration must be dedicated to a new role of education. The role of "action research" in the classroom.
5. A determination by all professional members of the school system to take steps to prepare themselves professionally for the change.
6. The emergence of a mature, self-reliant student who is self-motivated to accomplish individual projects and research.

OVERALL PROBLEMS:

1. That Des Moines may offer capable college bound students an English curricula beyond the four year system requirement.
2. That Des Moines may offer non-college bound students a simplified literature or business English course for the fourth year English requirement.

SPECIFIC PROBLEMS:

1. Inadequate time for planning and individual pupil aid
2. Small class enrollment
3. Small faculty, necessitating several preparations
4. Inflexible scheduling
5. Little provision for individual differences
6. Time and energy of teacher spent in non-teaching duties

GENERAL OBJECTIVES:

1. To overcome some of the small schools English limitations on the college bound student
2. To offer to non-college bound students a sound English base curriculum.
3. To use teacher-aide
 - 3.1 Give immediate reinforcement by test grading
 - 3.2 Free teacher for instruction
 - 3.3 Relieve teacher of clerical and monitor duties

SPECIFIC OBJECTIVES:

1. To encourage each student to accept personal responsibility
2. To encourage individual creativity; to stimulate participation in forensics, research, writing
3. To provide multi-class experience
4. To adjust the English curriculum for the college bound students to meet demands as indicated by progress of former students at college freshman and sophomore levels

TECHNIQUES AND METHODS:

1. Pre-test
 - 1.1 Iowa Tests of Education Development, Sept. 11, 1963
 - 1.2 Pre-test at beginning of 2600
 - 1.3 Pre-test at beginning at 3200
2. Post-test
 - 2.1 Iowa Tests of Education Development, April 17, 1963
 - 2.2 Post-test at the end of 2600
 - 2.3 Post-test at the end of 3200
 - 2.4 SCAT—April 23, 1963
 - 2.5 STEP—April 26, 1963
3. Progress chart kept on each student daily, making it possible to group for lectures
4. Teacher-aide grades tests and makes necessary records on the permanent record chart
5. Students are required to repeat frames in grammar text where they show need for further teaching

6. Literature students permitted to self-pace
7. Poetry taught in groups with teacher reading orally, followed by group discussion

8. "Listening Center" used for hearing tapes and recordings, using individual headphones

BIBLIOGRAPHY

LITERATURE

Scholastic Literature Units (State Adopted)

1. Family, Rockowitz
2. Courage, Dunning and Barton
3. Frontiers, Dunning and Lee
4. Mirrors, Bennett
5. Moments of Decision
6. Survival, Squire
7. Personal Code, Shafer

Readings in American and English literature can be accomplished with existing materials. (Harcourt-Brace Adventure Series)

READING

Advanced Reading Skills, Books 1 and 2 by Gainsbury (MacMillan)

WRITING

Experiences in Writing (State Adopted) by McKenzie and Olson

ENGLISH GRAMMAR

1. *English 2600* Harcourt, Brace
2. *English 3200* Harcourt, Brace
3. *TMI Punctuation* Grolier
4. *TMI Spelling* Grolier
5. *Programmed English* MacMillan

Progress Reports

The first year of the project we taught under near ideal situations: the hundred per cent backing of our administration, a full time teacher aide to assume clerical details, individual carrels for every student in the program, adjoining glass enclosed instruction room, special nongraded system of reporting to parents with only one final grade at the end of the course for the permanent record and college transcript, plus the stimulation of doing something new and different.

The second year the physical situation remained the same from September to March. But we were in a building program which drained away much of the energy of our administration, and we lost the teacher aide. This cut back some on the efficiency of the program. In March we moved into the new school plant, which still had a glass enclosed lecture room, but no individual carrels. We found that students continued to learn under these circumstances. We were furnished student graders who were of some assistance with straight objective tests, but were of little value in grading essay tests. The special nongraded system of reporting to parents was continued. Because students who had completed the programmed material were allowed to move on into literature, we found the teacher's work multiplied many fold. Students, progressing at their own rate, had distributed themselves at many levels

within the program itself besides the wide distribution now existing in the literature requirement for the year. The program itself is easy to administer and provide supplementary reinforcing exercises for, but the early completers presented the problem of planning and finding time so the teacher could work with them. We were able to alleviate this problem to a great extent by scheduling literature in the fall semester. Those who completed literature early were able to move on into the programmed course and do additional reading.

The third year of the program presented some changes and new problems. We had a new administration and an all new faculty, except one other teacher and myself. No one was familiar with the project or in particular sympathy with it. The room designed in the new building for the programmed instruction was assigned to the foreign language and math departments. About Thanksgiving the English classes were moved into the specially designed room with the glass enclosed lecture room. This change was suggested by Mr. Paul Simpson and Mr. Dan Chavez from the State Department of Education. Prior to this change the English classes were meeting in a large single room which had a curtition. We found it impractical to close the folding curtition because the students left in the section opposite where the teacher was giving instruction were not mature

enough to carry on their work in an orderly and constructive manner.

We had to work the program with no teacher aide, no student aide, and no outside assistance at all. It was a most difficult year from this standpoint, and the program of instruction was curtailed in exact proportion. The grading load is very heavy in programmed instruction. For maximum efficiency, a paper should be graded as quickly as possible after the test is taken. With a teacher aide this paper was usually graded within five minutes from the time the test was completed. Carrying a full teaching load, eight separate preparations for seven period days, I could only grade papers at night and return them the next day. This is directly contrary for the psychology of learning as Skinner and others found in their laboratory research that the more immediate the reward (grade) the greater the reinforcement of learning. I certainly found this psychology held true in the classroom. Much of the enthusiasm that we had experienced from students in the previous two years was lost by the long overnight delay.

Our writing program also suffered greatly. This we have always considered to be one of most important aspects of the program because it is the reinforcing experience that shows us whether the student is able to use what he has supposedly learned from the program. There were not enough hours in the day (and night) to grade all the papers and give the instruction that would have made a better program. When we worked with a teacher aide, she was able to grade all the program tests, but I have always graded all the theme assignments, both the original and the required rewrite. This facilitates a maximum efficiency program. When one person is required to do all the grading and all the teaching, he can only expect a minimum efficiency of the program.

We made another change this year which I feel may have been a step backward. We did away with the progress reports to parents and reverted to the old letter grades of A, B, C, D, F, and incomplete. This was much more simple than the individual progress reports which were used in the two previous years, but it was a definite concession to tradition and rigidly affixed standards.

Educators and our own State Department of Education have recommended that high school students be taught to write direct and accurate SENTENCES AND PARAGRAPHS. College English Departments tell us *they* prefer to teach their students to write research papers and more elaborate styles if high school teachers will only send them students who can write good sentences. Many

short writing experiences are of far greater value than a few long assignments. It has been our experience that most term papers are gross examples of plagiarism with very little original student writing. About all the student does is organize material which is collected from a number of sources! They may derive some benefit from the information read, but the value for writing original creative material is almost void. The papers I received this year substantiated my belief. I did reluctantly require a research paper, and as high school research papers go they were good, if not better than average. But I feel that the students would have benefited far more had they spent that time in *many* short writing experiences.

The first two years of the project I taught only the 2600 program published by Harcourt Brace. This year the 2600 program was taught by Mrs. Willie Pearl Black. Because she had attended none of our previous instruction and planning meetings in preparation for teaching the course, we worked together some on the background of the program. She took it from there, did an excellent job, and found the program to be a very effective way to teach grammar. She, too, recognized the heavy grading schedule required by the program. She had 25 students enrolled in the program. Her pre- and post-test scores will show that learning was achieved.

Mrs. Black also taught 2200 in junior high, and to Freshmen who failed to score above 60 on the pre-test in 2600. Freshmen who made below 60 took the 2200; then took 2600. Those who took 2200 first experienced no difficulty with 2600. Although most of these were students whose previous records showed them to be of below average ability, they made average grades in 2600, and many made the comment that they were glad they had taken 2200 first. And strange as it may seem, they did not seem to get bored or tired.

Fifteen eighth grade students took 2200, starting November 6, 1964 and finishing January 8, 1965. The lowest final score was 88. One student finished in twelve days with a final score of 94 with only one unit test below 88. Another student finished in 14 days with the same record. There were twenty-nine in the eighth grade class and the other fourteen took regular class work. The determining factor for selecting those who would continue with regular class instruction was this: if the student made less than 60 on the first unit test AFTER completing all the frames in that unit.

2200 has no pre-test for students and Mrs. Black gave none, so we have no measure by which we can show the rate of gain. Had we thought, we could have given the post-test at the beginning

and at the end of the program. One student made 100 on the final test; one student made 88, and all the others made above 90. These results lead us to believe that much teaching was done by the program.

We use Practical English Magazine and Harcourt Brace's Adventures in Appreciation in the sophomore year of English. The 3200 program is used in the junior year. I taught 3200 this year to fifteen students. As we have come to expect, they quickly scattered themselves throughout the program. Again the program proved that it will teach what it is supposed to teach. The smallest number of points gained was 13. This was by the student who scored highest on the pre-test. The largest number of points gained was 35. This was by students who showed much gain in maturity in many respects during this school year. All students' scores may be seen at the end of this paper.

We had a section of junior English composed of five junior boys who had Vocational Agriculture scheduled at the regular English III period and one senior boy who was short one English credit to graduate. These six boys worked with the new *English Syntax* by Paul Roberts. It is structural grammar and almost like a foreign language by way of comparison with traditional, functional grammar. These boys represented a wide variety of ability. There was some resistance to the complete change from all their previous grammar experience. They felt that this should have been introduced to them much earlier. We did not complete the course in the English III because we started too late in the year.

I have been fascinated by this new approach to grammar and would like to give the new text a fair trial. I first presented the book to the college prep seniors. They had already completed 2600 and 3200 and felt that their grammar preparation was adequate. Their resistance was so great that I finally gave up on them because they were not disposed to learn for the sake of learning; they felt they were being "put upon" and weren't disposed to do one ounce beyond the required!!!! The irony of it was that one of the boys in that class came to me this spring and showed me that the college of his choice offers this ENGLISH SYNTAX in its catalog.

One boy of above average ability did unusually well on this program. His scores were 94 and above. Students of less ability did not do so well, but they did show gain comparable to that of any previous work in English. The evidence is favorable but not conclusive.

All classes in English met daily for 55 minutes. This extra 10 minutes per day above the 45

minute periods we had last year allowed us to step up our program. This is adequate to do maximum work, yet not long enough for students to become bored. We did the 3200 first semester. Students were already widely scattered in literature from the previous year so when we got to literature we picked up at the farthest any student had read and completed the text. Then we went back to the beginning and picked up those who had not started literature at all, while those who had completed the required work for one credit in English studied in the student edition of Readers' Digest. They filled out the written work and gave weekly speeches to the assembled class. We find the need for such common gatherings to facilitate the feeling of class unity. All students were required to give some speeches.

I am 100 per cent sold on programmed instruction when properly supplemented with many writing experiences. Programmed instruction is one effective way of helping in the field of individual differences. Statistics show us that children entering kindergarten have a two year spread in ability, but by the time they have been in school twelve years there is a spread of ten years. Our goals in the program have been to help students develop desirable work habits and develop himself to his full capacity. Regardless of the number of years a student has spent in school, he is grouped with others and taught according to *ability* rather than *age*. The teacher becomes a director and guide, not just a lecturer. The program helps us enrich our program for those thirty per cent of the gifted students who will not be financially able to go on to college. We strongly recommend a teacher's aide to supplement the trained teacher. One teacher with one teacher's aide, plus many supplementary material aids, can handle a large number of students—Dr. Reed of BYU has estimated as many as sixty in a classroom of adequate size. A good program is of inestimable value to a teacher in a small school where the number of teachers is limited and every teacher has non-teaching extra-curricular activities. I do not hesitate to recommend programmed instruction as one adequate method of teaching English grammar.

These have been three of the richest and most rewarding years of my teaching career. Through my work with the project I have been brought in contact with so many intelligent and inspiring people. It has been a real source of pleasure to be associated with these people. The project has brought me in contact with the latest materials in the field and sent me to school to learn the latest thinking in the psychology of learning. In turn, students have benefited from this experience as I brought my newly acquired learning to the class-

room. I have been able to share this information with other teachers before whom I have had the privilege of speaking, as well as with those who have come to observe in my classroom. I have profited from the association with fellow teachers participating in the project, from State Department of Education personnel, many conferences and visits to my classroom, particularly Paul Simpson and Henry Pascual—specialists who acted in an advisory capacity—from the week workshops conducted in Santa Fe in June of 1964 and 1965, from the Regional workshop at Albuquerque

in October 1963, with teachers and directors from Utah, Colorado, Arizona, and Nevada, from the two workshops at Brigham Young University Lab, 1962 and 1964, and last, but not least, from Mr. Dan Chavez, our Small Schools Coordinator who tied all these loose ends together to make one neat package. It is with much regret that I see the project come to the close but we certainly don't intend for this to be the end of our interest in programmed instruction and other up-to-date innovations in the field of teaching.

Analysis of Learning Results

The results of eight different studies are analyzed in this report. These results are based upon data reported by the following schools: Pojoaque, Des Moines, Dora, and Cloudcroft. Separate analyses are reported for each school, individually, and are appended to this report.

Overall Performances. An overall analysis of the results of programmed instruction in these schools revealed substantial gains in learning in all instances. Employing the gain ratio, which is a comparison of the amount actually learned with the amount that could possibly be learned (Ellis, 1964) all schools studied showed at least highly acceptable amounts of learning. The gain ratios ranged from a low of .49 to a high of .63 (.49, .50, .53, .59, .60, .61, .63, .63) which indicated that not only were the students, on the average, learning half, or more than half of what they could possibly have learned, but that the different schools are remarkably comparable in the amount of gain in learning. (In all instances such gain ratios must be interpreted conservatively since evidence regarding comparability of the pre-tests and post-tests is unknown.)

Variability. No consistent changes in varia-

bility of achievement were noted. In some instances, an increase was noted and in others a decrease was obtained. No apparent reason for this inconsistency in change was evident.

General Conclusions. Based upon analysis of learning data, these programs can be regarded as effective teaching instruments. Post-test ceilings were also high, ranging from a low of 46 to a high of 85.92 (46.82, 71.36, 79.10, 81.04, 82.80, 83.90, 85.00, and 85.92) which again indicates the comparability of the students. Why, of course, the students did not achieve even higher scores is not known, but it is clear that the students are averaging about 80% on the post-test, which is a substantial amount of achievement.

REFERENCES

- ELLIS, H. C. Research designs in studies of programmed learning. *National Society for Programmed Instruction Newsletter*. Vol. 1, No. 4, 1962, Pp. 8-9.
- ELLIS, H. C. Judging the teaching effectiveness of a program. In Ofiesh, G. & Meierhenry, W. *Trends in Programmed Instruction*, NEA & NSPI, 1964, Pp. 207-209.

Teaching Effectiveness of English 2600

The purpose of this report is to provide an evaluation of the "teaching effectiveness" of *English 2600* used at Des Moines High School during the year 1963-64. This report will describe and analyze the basic data obtained in the study, *Des Moines Public Schools Small Schools Progress Report*, prepared by C. Click. This report will confine itself to an analysis of the data obtained by

administering pre-tests and post-tests as these findings permit assessment of the teaching effectiveness of the program. For additional details, one should examine the Mestas report.

Method—Prior to using the program, *English 2600*, all students (n=120) in the study were given a pre-test prepared by Harcourt-Brace. The pre-test consisted of seventy-two items which were

weighted so as to permit a total possible score of 100. Following the pre-test, the students took the program, and upon completion of the program, they then took a final test. The final test was similar in structure to the pre-test and consisted, again, of seventy-two items weighted so as to permit a total possible score of 100. The post-test employed was the Harcourt-Brace final test. Although 127 students actually participated in the study, the data of only 120 were analyzed as both pre-test and post-test scores were not available for seven students.

Learning Results.—The basic results of the study can be seen in Table 1. The students averaged 60.09 correct items (out of possible 100) on the pre-test, indicating that they already knew a considerable amount of the material, or content, taught in *English 2600*. In turn, the students averaged 79.10 on the post-test, indicating at least a reasonable amount of improvement following practice with the program. Caution must be made with this interpretation (see conclusion 4) as the pre-tests and post-tests were not identical and evidence as to their comparability is unknown. (The use of the gain score is appropriate only with identical tests or with equivalent forms). The average gain in improvement was 19.88 items, a gain which was statistically significant beyond the .01 level of confidence as assessed by a "t" test: ($t = 17.45$, $df = 119$, $p < .01$). Thus, we can be confident that the students were actually learning from this program.

Although the students showed a gain of about 20 points on the test, an interpretation of this gain is more easily made if we examine a ratio of actual gain compared with the amount of possible gain, a measure described by Ellis (1964). This measure, called the *gain ratio*, provides an estimate of the "power" or "teaching efficiency" of the program. Since the students gained an average of 19.88 points, and they could have actually gained a total of 39.91 points, the gain ratio was .498. In other words, *the students were learning about half (50%) of what they could have possibly learned from the program.*

Variability in Performance. Although an analysis of the achievement test scores revealed that the students showed a significant gain in achievement following programmed instruction, an inspection of Table I reveals that they are somewhat *more variable* in performance after programmed instruction than before. The standard deviation (SD) of the pre-test scores was 11.85. Although this increase in variability, or individual differences, is not great enough to be of much practi-

cal significance, it is an increase which is satisfactory at the .05 level of confidence.

It is interesting to note in this connection that one frequent claim of producers of programmed instructional materials is that "PI" frequently leads to a reduction in individual differences. Just the opposite occurred here, with a slight increase in performance variability.

Overall Performance. A picture of overall performance can easily be seen by examining Figure 1. This figure is a frequency distribution which shows the frequency with which students score within certain intervals on the pre-test and post-test. The figure reveals the marked shift in improvement from pre- to post-test performance as well as reveals that the variability in student performance is still relatively large after completion of the program.

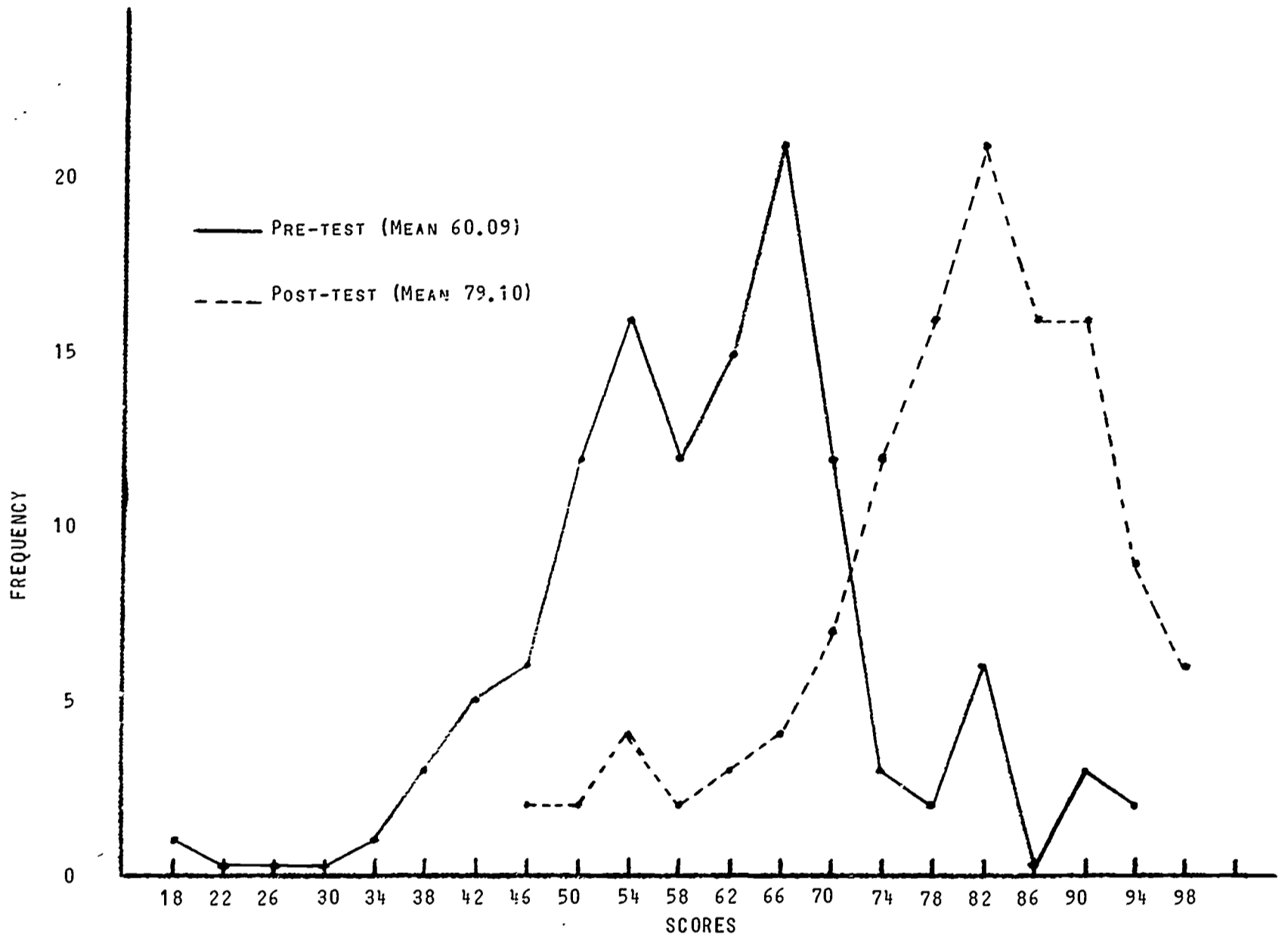
Conclusions. An analysis of the test data reveals that:

- (1) A significant amount of learning is produced as a result of programmed instruction with *English 2600*.
- (2) The program is reasonably efficient in teaching as reflected in the gain ratio of approximately .50.
- (3) No marked change in variability of performance resulted from the use of the program; in fact, there was a slight tendency for greater variability following use of the program.
- (4) These conclusions must be tempered somewhat since the pre- and post-tests were not identical. It is possible that had the same tests been used (say the post-test) that the actual gain could have been greater. In short, the pre-test *could* have been considerably easier than the post-test, thus tending to make the students look better at the beginning.

REFERENCES EVALUATION OF TEACHING EFFECTIVENESS OF *ENGLISH 2600*

- a. School: Des Moines
 - b. Teacher: C. Click
 - c. Program: *English 2600*
 - d. Sample: $N = 25$
 - e. *Summary Table of Results:*
- | | Pre-test | Post-test | Gain | Possible Score |
|-------|----------|-----------|--------|----------------|
| Mean | 56.76 | 81.04 | 23.04* | 100 |
| S. D. | 14.00 | 9.84 | | |

Figure 1



DISTRIBUTION OF SCORES ON THE HARCOURT-BRACE PRE-TEST AND POST-TEST, SHOWING UPWARD SHIFT IN THE DISTRIBUTION OF SCORES AS A RESULT OF PROGRAMMED INSTRUCTION.

*t = 2.10, df = 24, p. < .05

f. Gain Ratio: .53¹

g. *Summary and Conclusions:*

Students showed a significant amount of learning as a result of using *English 2600*. The average gain was 23 points, which was significant beyond the .05 level of confidence. Students learned 53% of what they could have possibly learned¹, based on analysis of the gain ratio. Some reduction in variability on the post-test was noted.

EVALUATION OF TEACHING EFFECTIVENESS OF *ENGLISH 3200*

a. School: Des Moines

b. Teacher: C. Click

c. Program: *English 3200*

d. Sample: N = 15

e. *Summary Table of Results:*

	Pre-test	Post-test	Gain	Possible Score
Mean	61.47	85.00	23.53*	100
S. D.	10.47	7.80		

*t = 15.67, df = 14, p < .01

f. Gain Ratio: .61

g. *Summary and Conclusions:*

Students showed a significant amount of learning as a result of using *English 3200*. The average gain was 23.5 points which was significant beyond the .01 level of confidence. The gain ratio revealed that students learned 61% of what they could have possibly learned. Some reduction in variability on the post-test was noted.

¹ This must be interpreted conservatively, based upon cautions outlined in this report earlier.

Some Pertinent Conclusions

1. Experimentation is exciting and opens up many doors in education.
2. The experimentation should be *Action Experimentation* occurring in the classroom.
3. A dynamic faculty willing to experiment and change is a necessity.
4. The faculty must be given opportunity to be flexible in their class situations and the opportunities to attend specialized conferences and workshops.
5. Extra remuneration for workshops and conferences should be available to the faculty.
6. Professional aides should be employed.
7. Advanced salary schedules should be a goal for the Master or Senior teacher.
8. A complete new conception of scheduling should be involved.
9. The scheduling should be accomplished through modules of times.
10. Each student should be scheduled individually according to his need based on factual information.
11. Each student should be assured of a minimum amount of time for individual study.